



357054

WW ENGINEERING & SCIENCE
5301 East River Road, Suite 110
Minneapolis, MN 55421
Phone (612) 571-2869

MEMORANDUM

To: Ted Leitzke
Site Project Manager for ARCS

cc: Jerry Canfield
Liz Bartz

From: Jeff Groen, Project Hydrogeologist

Date: November 23, 1993

Subject: Wisconsin Steel Works Site
Discussion with Tracy Fitzgerald (IEPA) on November 23, 1993
(Project #04015.23)

This morning I discussed the Wisconsin Steel Works site (WI Steel) with Mr. Tracy Fitzgerald of the Illinois Environmental Protection Agency (IEPA) for approximately 40 minutes. Apparently, Mr. Dick Leonard of the USACE from Buffalo, New York, had received our/USEPA comments regarding the Site Characterization Interim Report (completed about a month ago), and Mr. Leonard had some questions for the IEPA.

Our comments included recommendations to characterize site-specific geologic stratigraphy and determine the possible existence of contamination beneath the confining till unit. However, the IEPA had strongly discouraged the Corps from "making swiss cheese" of the site by doing all of the initial investigative work within and above the Wadsworth Till (ie. no borings or monitoring wells were to be completed beneath the confining till unit). Mr. Fitzgerald indicated that a "cat in a sandbox" can't do much damage, and an investigation of geologic units beneath the till may now be proposed because we have some understanding of the site's hotspots. In general, I concurred with Mr. Fitzgerald's comment, and we agreed that deeper site-specific investigations are now appropriate.

I also suggested that continued characterization of the till as an aquifer be abandoned, and, instead, the till be recognized as an aquitard. Mr. Fitzgerald agreed and indicated that he had never before seen such a till unit investigated as an aquifer. I also asked about the monitoring well screen depths, and I suggested that the existence of LNAPLs (and DNAPLs) required additional investigation. Mr. Fitzgerald agreed.

Finally, Mr. Fitzgerald indicated that he would call Corps soon and request that they put together some recommendations for additional investigative work. This work may include characterization of deeper geologic units provided safeguards are included, such as sealing the deep borings via double-casing into the till. Each of the recommendations must be clearly justified and the methods of investigation adequately documented. After submitting the recommendations, Mr. Fitzgerald suggested that the IEPA and the USEPA work cooperatively in their response to the Corps before approving the additional investigations.

I encouraged Mr. Fitzgerald to contact Ms. Laura Ripley, the USEPA's Project Manager, and my supervisor, Mr. Theodore Lietzke, regarding a united response to the Corps. Mr. Fitzgerald acknowledged his responsibility to contact the USEPA, but he indicated that he had wanted to contact me regarding the above technical issues before responding to Mr. Leonard's questions.

TECHNICAL REVIEW OF
SITE CHARACTERIZATION INTERIM REPORT
Wisconsin Steel Works
South Deering, Illinois
October, 1993

WW Engineering & Science (WWES) has prepared the following technical comments for the U.S. EPA, Region 5, concerning the August, 1993, draft report titled "SITE CHARACTERIZATION INTERIM REPORT," completed for the U.S. Department of Commerce (DOC) Economic Development Administration (EDA), as prepared by the U.S. Army Corps of Engineers (USACE), Buffalo District.

The above referenced "Interim Report" includes a summary of initial (Phase I) activities conducted in the Fall of 1992 at the Wisconsin Steel Works (WSW) Site as well as recommendations for further investigations during the upcoming Phase II field sampling and analysis. WWES appreciates the opportunity to review this report, and we look forward to assisting the USEPA as we work with the Corps, their contractor (Lester, Inc.), and the EDA towards a complete investigation of the environmental challenges by the WSW site and its recommendations.

We have appreciated the Corps' very forthright cooperation during this technical review. In addition to the Interim Report, reference above, and the Project Management Plan (January, 1993) provided to us by the USEPA. The Corps has sent us a 1928 Volume of WSW and a copy of the Rapid Response Report (May, 1992) documenting the Corporation's previous remediation activities. Although several sources of information are available to WWES regarding WSW. The following technical comments specifically address the Interim Report.

In general, the Interim Report follows the suggested RI Report format outlined in a USEPA publication, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA." However, WWES understands that the Interim Report is not a RI Report; rather, the Interim Report includes a preliminary summary of the information from sampling and analysis. As such, the information contained within the Interim Report has been technically reviewed in an effort to assist the Corps as they conduct their investigative activities.

10-18-93

GENERAL COMMENTS

In general, the Interim Report presents the results of the initial (Phase I) sampling and analysis in a logical manner. However, a number of the initial activities proposed in the RI Statement-of-work have not been completed for the Interim Report. Additional concerns addressed within the Interim Report have not been clearly developed the following omissions are among those referenced above:

- A USGS 7.5' topographic map with the site location has not been included in the Interim Report, and would prove useful. (Is there also a topographic map of the WSW Site available with 1-foot contours on a 1" = 50' scale?)
- Although Figure 2-3 and Figure 2-4 include typical monitoring well construction diagrams for the sand and till units, no well logs or soil boring logs exist within the Interim Report. WWES recognizes that tentative well and soil boring completion depths exist on the cross-sections, but such depiction's are vague. WWES also understands that these "logs are contained in Appendix 4 of the ARDL draft report" (4th paragraph of page 2-6), but the ARDL report was not available for review.
- No discussion of previously-existing on-site water wells was included in the Interim Report. (The 5th paragraph of page 2 on the Statement-of-Work includes field verification of selected water wells on the WSW site.)
- Although section 3.3 includes a general discussion of the regions surficial and bedrock geology, supplemental information from on-site and off-site water well logs would greatly increase our understanding of the site's sensitivity to contamination.

In addition to the omissions mentioned above several environmental concerns are worth highlighting. These concerns or deficiencies follow:

- The Interim Report discusses the existence of "two unconfined aquifers at the WSW site" on the 5th paragraph of page 3-16. (We assume that these "aquifers" are the Calm, Sand and the Wadsworth Till.) However, the 3rd paragraph of page 3-22 indicates that the Wadsworth Till "is technically an aquitard rather than an aquifer. Although these two geologic units are further characterized in the text, they are, of times, represented as one hydrogeologic unit. (See, for example, the "Sand and Till"

piezometric surface maps in appendix 1.) Are these units hydraulically isolated from each other? How have the monitoring wells set in the Wadsworth Till been sealed from possible overlaying contamination? Please discuss what, if any, vertical gradient exists between the two aquifers.

• More coming

SECTION 1.0 - INTRODUCTION

General Comment

Although pages 1-14 and 1-15 of Section 1.2.2 discuss each of the site's major areas, a few paragraphs introducing the entire steel-producing process would greatly enhance the significance of WSW's reference as "a truly integrated steel manufacturing facility" (the paragraph of page 1-9).

Pages 1-14 through 1-16 and Figure 2-1

Page 1-23, 1st Complete Paragraph

Why are some areas which are indicated as existing within the WSW Trust not apparently included within the Interim Report's areas of investigation? (For example, land west of Torrence Avenue, or land west of the existing playground, formerly a railroad switching yard.)

Page 1-23, 1st Complete Paragraph

Apparently the bottom of a sump was broken to prevent rain water retention, but would this allow rain water to more easily percolate through possible contaminated underlying soils and more easily impact the ground water? Were the underlying soils sampled and analyzed?

SECTION 2.0 - PHASE I SITE INVESTIGATION

Page 2-1, 1st Complete Paragraph

The statement-of-work within the Project Management Plan indicated that all of the Site's monitoring wells were of stainless steel construction. Were the six wells previously-installed by Darnes and Moore also stainless steel? And, consequently, compatible with the new wells.

Page 2-1, 2nd Complete Paragraph

Did the magnetometer survey generally indicate that miscellaneous metal existed throughout the site's subsurface? or not?

Page 2-1, 3rd Complete Paragraph

Were water samples or sediment samples collected from any of the storm sewer manholes? Is the general condition of the site's previous storm and sanitary sewer systems known?

Page 2-2 and 2-3

Figures 2-1 and 2-2 would be more readable if less of the surrounding community were included. The monitoring well, soil boring, and surface sampling identification labels are also not readily distinguished from each other. Otherwise, the figures present a very useful overall perspective of the WSW site.

Page 2-4 and 2-5

Page 2-3 and 2-4 suggest that the "typical sand well" and the "typical till well" were set below the groundwater table. If the majority of the 24 monitoring wells are set beneath the water table, how can such light non-aqueous phase liquids (LNAPLs) as gasoline or fuel oil be detected as floating product impacts to the ground water? Are all of the monitoring wells completed with 5-foot screens? A 10-slot (0.01 inch) screen may not be narrow enough to adequately screen fine particulates from the till wells. Has this possibility been considered. No sampling and stabilization logs are available for review; so, we cannot comment on the turbidity variations. Total metals levels within the till wells may be greatly effecting these fine particulates.

Page 2-1, Section 2.2 Monitor Well Installation and Sampling

In the text, please specify which wells are screened in the Carmi sand and which wells are screened in the Wadsworth glacial till. Typically, the auger size would be specified by the inner diameter, not the outer diameter (with time the outer diameter may change as it becomes worn down). No details regarding the monitoring wells' screened depths exists within the introduction. Although described as "Set ten (10) feet into the till layer," this description is vague. What specific indicator flagged the sand-till horizon? Please reference the location of the description of the screened depths.

Page 2-2. Figure 2-1 Location of Wells and Soil Borings

Please provide a legend that clearly details what each symbol specifies.

Page 2-6. First Paragraph

How were the wells developed and purged? Was the evacuated water containerized? How were the wells sampled for chemical analysis?

RE: Monitoring well MW-3, what was the nature of the access problem? Is the well damaged?

Page 2-6. Section 2.3 Soil Boring Program

How were the soil samples collected? Were the soil samples composited prior to sample collection?

What were the results of the grain size analyses, the Atterburg limit analyses, and the moisture content analyses?

As mentioned in the general comments, no soil and monitoring well boring logs were available for this review. These logs should be included in the Interim Report.

WWES does not have Appendix 4 (The soil and monitoring well boring logs).

Page 2-6. Section 2.4 Surface Water Sampling

Why was a "plastic bottle" used for surface water sampling? WWES recommends that future surface water sampling be conducted using either Teflon or stainless steel equipment. The use of a plastic bottle may add organic compounds to the sample.

Page 2-6, 6th Complete Paragraph

Please explain the decontamination procedures between sampling events.

SECTION 3.0 - PHYSICAL CHARACTERISTICS OF THE STUDY AREA

Page 3-1, 1st Complete Paragraph

Please include the available site's topographic maps within the Interim Report.

Page 3-1, 2nd Complete Paragraph

A table listing the elevation of the site's permanent monuments should be included in the Interim Report.

Page 3-1, 3rd Complete Paragraph

The reference 1991 USGS topographic map should be included in the Interim Report.

Page 3-1, 4th Complete Paragraph

When did the slag area begin receiving slag, based on the aerial photographs?

Page 3-4, 1st Complete Paragraph

What are the boundaries of the "southeast site?". What does the Interim Report mean when it indicates that "the Calumet region in general has served as a sort of 'dumping ground' for over a century?"

SECTION 3.3.1 - SURFICIAL GEOLOGY

Pages 3-4 and 3-6

Based on the description within this section we assume that the Carmi Sand is a member of the Equality Formation which is highly permeable and exists to a depth of approximately 20 feet. The Wadsworth Till is a largely impermeable heterogeneous clay unit which exists to a depth of approximately 50 feet, and the Lemont Drift is an apparently permeable silt and gravel unit existing at least to the depth of the exploratory borings (86.5 feet). Beneath these Quaternary units are Paleozoic sedimentary bedrock units (principally Silurian carbonates). Based on this information we understand that approximately 30 feet of the Wadsworth till may separate surficial contamination from impacting the bedrock units, which apparently serve as "important aquifers in the vicinity of Lake Calumet" and the site. (See also the 3rd sentence of the 2nd complete paragraph on page 3-15.)

Why isn't Figure 5-5 on page 5-12 included in this discussion?

Pages 3-8 through 3-14. Geologic Cross-Sections

Although the cross-sections are helpful, the lack of actual monitoring well and soil boring logs restrict our corroboration of their accuracy. It would also be useful to include a symbol for the water level encountered in each monitoring well/boring during a particular measuring event.

Page 3-15. 1st Incomplete Paragraph

What characterizes a geologic unit as "nearly impermeable?" Impermeable units are not generally considered aquifers. Why is the Wadsworth Till considered an aquifer?

Page 3-15. 1st Complete Paragraph

Although true that ground water flow within surficial unconfined aquifers "is generally regulated by local topography, no topographic maps are available for review within this Interim Report.

Ground water flow is logically suggested (and apparently mapped) toward the north and south slips; however, the cross-sections suggest that sheet pilings may penetrate as much as 10 feet into the Wadsworth Till. We understand that such slip walls are not perfectly sealed at their joints, but such steel "walls" may greatly reduce interaction between the

slip's surface water and the Carmi Sand's ground water. Has this possibility been investigated. If so, what were the investigation's results?

Although radial ground water flow may be expected from hills to lower areas this is not likely the case for minor surface mounds. It is also unlikely that this radial flow would coincidentally occur around existing monitoring wells (as shown on the figures on page I-1, I-9, I-16, I-19, I-22, I-23, I-24, I-30, and I-33).

Several receptors are suggested as possibly modifying the ground water flow, such as sewer construction. This possibility should be better developed. At least 14 storm sewer outfalls appear to have discharged the slips or the Calumet River (see 1928 map). This network of storm sewers likely provides a direct conduit for Carmi Sand aquifer and Calumet River exchange. The application of investigations such as a tracer survey may greatly increase our knowledge of the storm sewer effects.

Page 3-15, 4th Complete Paragraph

Is the Niagaran Dolomite mentioned on page 3-7 as existing at depths of 50 to 80 feet below the surface considered part of the "shallow bedrock aquifer system?"

SECTION 3.5.1. SITE HYDRAULIC CHARACTERISTICS

General Comment

Page 3-16, 4th Complete Paragraph

The concept of "two unconfirmed aquifers" is not logical.

How can the average thickness of the Carmi Sand be 10 feet when page 3-7 indicates that its thickness ranges from 5 to 8 feet? How were the slug tests performed? How were the calculations performed? What calculation method was utilized? Please provide the raw slug test data, including printouts and plots in an appendix.

Generally, weekly ground water and staff measurements are not necessary; monthly to quarterly measurement are adequate.

Page 3-17 and 3-18. Table 3-2

What constitutes "O.K." data? We assume that "Error - fluctuating recovery" indicates that the monitoring recovered very slowly or went dry during the slug tests. Is this true?

Page 3-22. 1st Complete Paragraph

Apparently piezometric maps for the slug area have been completed, but such maps do not exist within the Interim Report. We understand, however, that only two monitoring wells exist within the slag area; so, valid ground water maps cannot be interpreted. (Moreover, calculating a gradient based on only two monitoring wells is not likely accurate.) Please indicate the data and wells from which the various ground water gradients were calculated.

The application of Drake's equation as expressed assumes homogenous conditions and laminar flow throughout the aquifer system (similar to a straight, sloped pipe). The resulting flow rates also suggest a flow-through area significantly larger than is reasonable. The calculations for this section should be included within the appendices.

We agree with the text's suggestion to refer to the Wadsworth Till as an aquitard based on the listed permeability. However, the permeability value is based on only one slug test. Several more tests from additional monitoring wells is recommended.

Page 3-25. Figure 3-12

The apparent slow water recovery of most of the till wells indicates that water level measurements from till wells cannot be utilized for accurate piezometric maps until they've equilibrated. This equilibration appears to take approximately two months.

Monitoring well MW-21, a tile well, indicates water levels which are very similar to nearby MW-22, a sand well. Perhaps MW-21 has not been properly sealed from the Carmi Sand ground water. Hence, its relatively speedy recovery and high water table reflect leaky conditions. If so the Wadsworth Till appears to have a very low hydraulic conductivity and may be considered an aquiclude.

Page 3-26. 1st Complete Paragraph

We recommend that MW-24 be re-surveyed.

How was it determined that certain water level measurements "were beyond the effects of the draw down?"

Page 3-26. 2nd Complete Paragraph

If no piezometric maps can be constructed for the slag area, how can a ground water flow rate be calculated?

Page 3-31. Last Paragraph

Please provide the well logs for the surrounding area's industrial and private wells, include a map with approximate locations.

Page 3-33. 1st Complete Paragraph

Why is data for the hydrologic systems in Indiana presented? WSW exists in Illinois. Is NE Illinois' use of the hydrologic systems similar to NW Indiana. If so, please reference the information.

Page 3-36. 5th Complete Paragraph

Please list in a table the criteria necessary to determine eligibility as a Historic Place. Also include the rationale for determining the WSE Site's ineligibility.

SECTION 4.0 - NATURE AND EXTENT OF CONTAMINATION

General Comments

1. Throughout this section, it is stated that "A health risk assessment of levels is recommended and planned." WWES recommends that a risk assessment is performed for all chemicals of concern. WWES recommends that the various agencies determine what kind of approach should be taken as far as the reporting goes. Will a site-wide risk assessment be performed or will an operable unit approach be taken?

2. Because the data tables are summary tables and typically represent one area, it is difficult to determine exactly what analytical scans were run for a particular sample. Please provide all of the data in tabular format in an appendix. It is sufficient to have summary tables in the report text. WWES would recommend the following format changes/additions to the tables in the future;
- a) The tables be grouped by media (place all of the ground water analytical results into one table, all of the soil analytical results, etc.). One of the heading fields could be dedicated to specifying which area the monitoring well/boring/surface water/sediment sample is located.
 - b) The tables should include the sample date.
 - c) It would be useful to have the first column of each table listing the method detection limits.
 - d) It would be useful to add the applicable criteria to the tables also. Detected concentrations above the applicable criteria could be bolded or shaded.
 - e) The qualifiers provided by CLP labs have various meanings. For instance, a "B" for an organic scan means that the compound was found in a blank sample as well as an investigative sample. A "B" for an inorganic scan means that the analyte was detected below the contract required detection limit (CRDL) but above the instrument detection limit (IDL). Therefore, please be careful when combining organic and inorganic compounds on the same table.
- 3) Please specify what ground water samples were filtered and what samples were not filtered. What size filters were used?
- 4) There are several occurrences where the analytical results for the ground water samples vary greatly. Some examples include;

MW9 - cyanide concentrations from Rounds 1 and 3 were non-detect, Round 2 contained 120 ug/l

MW8 - chromium concentrations from Rounds 1 and 3 are low when compared to Round 2.

Was the same laboratory used for each round of sampling? Does this seem to occur with only one round (could it be seasonal variations? Were the same sampling procedures/equipment used? Were the wells all purged in the same manner?

Page 4-1. Entire Page

Although Federal Land Disposal Restrictions (LDRs) exist and Illinois soil cleanup criteria exist for tank release sites WWES recommends that the various agencies determine what criteria will be applicable and acceptable. The use of data from average and typical ranges found in U.S. soils, Welsh surface soils, the Velsicol chemical site (which one??), and Class II ground water standards may not be acceptable (The Interim Report even recognizes that the Welsh soils do not receive fallout from heavy industries, which has occurred at this site). Rather, local background concentrations may need to be determined.

Page 4-4. Table 4-3 Soil and Ground Water Cleanup Objectives for Velsicol Site

RE: The "**** footnote - Apply to all petroleum cleanups with the exception of gasoline." Is considered a petroleum cleanup?

4.8. 2nd Complete Paragraph

Only one boring was advanced in the office area (2.5 acres) to a depth of 25 feet. Additional borings are recommended to adequately characterize the area's possible soil contaminant levels. How was the office previously heated? Were underground storage tanks utilized to store heating oil? (Note that all three soil samples showed the presence of TRPH and Oil and Grease.)

Page 4-8. 4th Complete Paragraph

When were the three ground water sampling rounds completed?

Page 4-12, Section 4.2 Slag Area

While the slag itself is not hazardous by definition, compounds leaching from the slag into underlying soils may be producing impacted soils that are characteristically hazardous. Future investigations should include TCLP testing in areas of slag burial. We also recommend that the slag itself, be TCLP tested.

Elevated concentrations of arsenic, barium, cadmium, chromium, copper, lead, manganese, selenium, zinc, cyanide, sulfide, and oil & grease were detected in samples collected from the slag area. In addition, elevated concentrations of chromium, lead, and cadmium were detected in ground water collected from monitoring wells installed within the slag area.

Page 4-23. 1st Incomplete Paragraph

Several detected contaminants appear to have been overlooked. For example, analytical results of SB-18 (1-5') indicate TRPH and Oil & Grease impacts. Please include a discussion of all contaminants demonstrating elevated concentrations.

Has the soil/fill containing 180 ug/kg aroclor been excavated or sealed off from access? There are no fences around the slag pile and the public could encounter these soils.

Page 4-23. Table in the Lower Half of the Page

Is there any particular reason why this table is labeled "*Toxic* metal concentrations (ug/l) ...".

Page 4-24. Table 4-18 Summary of Contaminant Levels - Gasoline Tank Disposal in Slag Area

Are the units on this table correct?

Page 4-28. 5th Complete Paragraph

Are all of the listed chemicals suspect as being laboratory contaminants?

Page 4-28. 6th Complete Paragraph

We recommend that the location of the elevated Chlordane and PCB contamination be re-sampled and analyzed for confirmation purposes.

If appears as though the elevated PCB estimate of 19,000 mg/kg for SB-10 (16-17') was omitted from the text's PCB discussion (although mentioned later on page 4-59 and 4-60).

Page 4-28. Section 4.3.1 Soil and Fill in the Steel Finishing Area

Regarding the detections of chlordane. Is there a possibility that the waste water treatment plant accepted liquid waste or that drums could have been cleaned out and the remaining liquids disposed of at the treatment plant? I.e., residues from pesticide containers. Is there any history in the records of a connection with the Velsicol Chemical Company and this site? Was the treated water discharged into the Calumet River? How and where were any remaining sludges disposed of?

Page 4-59. 5th Complete Paragraph

Contrary to the text's suggestion, Table 4-21 does not indicate that SB-12 was advanced through fill to a depth of 25 feet. However, the vague sample descriptions listed for MW-13 do suggest that fill existed to approximately 30 feet, possibly the bottom of the old North Slip.

Page 4-60. 2nd Complete Paragraph

The elevated levels of Chlordane in SB-11 should also be mentioned in this paragraph.

Page 4-63. Section 4.3.2.2 Water Treatment Plant Foundations

What disposal procedures were generally applied to the treatment sludges?

Page 4-63. Last Incomplete Paragraph

Previously the Wadsworth Till had been referred to as a silty clay unit; however, this paragraph suggests that MW-10 was set in a "sand and clay" Wadsworth Till. Nonetheless, Table 3-2 indicates than the low permeability till yielded only a "fluctuating

recovery" during the slug tests. This comment merely notes the possibility of sand lenses within the till, as shown on Figure 3-4.

Page 4-78, Top Line

What is meant by the description "toxic"?

Page 4-79, 1st Complete Paragraph

The depth of the old North Slip is not known. If, for example, the slip were 30 feet deep, then the completed monitoring well would be partially surrounded by fill material. We recommend that the slips location and dimensions be better delineated.

Page 4-95, 4th Paragraph

We concur with the Interim Report's statement that "the source for chlordane at the (site) is perplexing;" consequently additional historical research and ongoing pesticides analyses are recommended to determine the source. (The pervasive PCB observations are also troubling and require additional investigation.)

Page 4-95, 5th Complete Paragraph

Why are clean-up standards get for the Velsical site being applied to WSW?

Page 4-99, 1st Incomplete Paragraph

We concur with the Interim Reports recommendation that sediment samples from the precipitator foundations be TCLP tested.

Page 4-99, 2nd Complete Paragraph

How have "toxic wastes" such as these PCB-impacted sediments been disposed of from the WSW site?

Page 4-99, 4th Complete Paragraph

Please detail the levels of BETX contamination in the text.

Page 4-113. 1st Complete Paragraph

In addition to the recommended activities, we suggest that a water-table well be installed adjacent to MW-5 and that recovery of the free-product be commenced as soon as possible.

Page 4-113. 4th Complete Paragraph

This paragraph indicates that soil samples were collected beneath the water table for chemical analysis. Generally, soil samples are not collected in the saturated zone, where water can "wash" the soils. Were saturated soil samples collected for analysis? If so, why?

A PID instrument is referenced in this paragraph. Was a PID used during all of the soil boring and monitoring well boring investigations? If so please include their results with the boring logs in the appendices.

Page 4-113. 5th Complete Paragraph

Confirmation soil borings and soil sample analyses are recommended the previously-detected PCB location. We also recommend that a monitoring well be set at the bottom of the Carmi sand to test for the existence of this very dense, non-aqueous phase liquid (DNAPL) on the till surface. (The presence of PAHs within the soils of the till is also troubling.)

Page 4-113. Section 4.5.1 Soils and Fill in the Blast Furnace Area

Regarding the detections of pesticides/PCBs and solvent type compounds. Is there a possibility that liquid wastes were burned in the Blast Furnace? How and where was the ash/residue from the blast furnace disposed of? Perhaps they were utilized as fill elsewhere on the site?

Page 4-125. 3rd Complete Paragraph

In addition to the recommended activities we recommend that additional soil borings and soil sampling be conducted to delineate the vertical and horizontal extent of contamination.

Page 4-133. Table at the Top of the Page

What is the significance of the two reported values for MW-2 during Round 3? Do those concentrations represent filtered vs. non-filtered? Please specify. If that represents analyses from duplicate samples, the results do not correlate very well.

Page 4-134. 2nd Complete Paragraph

Is Table 4-85 considered a summation of boring log notes. Please include the boring logs, themselves, in the appendices.

Page 4-153. 1st Complete Paragraph

The necessity of a slurry wall to impede contamination of the Calumet River is dependent on the extent of contamination and the velocity of its flow toward the river. Delineation of the horizontal and vertical extent of contamination is the first priority.

Page 4-164. 1st Complete Paragraph

We recommend that water from the Coke Plant pit not be disposed of at a landfill; such as proposal may greatly increase the landfill's leachate toxicity. Disposal at sewage treatment plants or other treatments are suggested alternatives.

Page 4-176. Top Table

Why are two or three values reported for several of the monitoring well sampling events?

Page 4-177. 2nd Complete Paragraph

See comment to page 4-153, 1st Complete Paragraph

Page 4-185. 7th Complete Paragraph

See comment to page 4-153, 1st Complete Paragraph

General Comments For Section 4.0

What was the nature of the QA/QC effort for field sampling and analysis? I.e. How many trip blank, equipment blank, duplicate and matrix spike/matrix spike duplicate samples were collected? Was the analytical data QA/QC'd by the USACE? Please incorporate this information in the next submittal.

Were any subsurface soil samples collected beneath the water table submitted to the laboratory for analyses? Once below the water table, the contamination is generally a ground water problem.

SECTION 5.0 - POTENTIAL CONTAMINANT PATHWAYS

No technical review completed for this section.

SECTION 6.0 - SUMMARY AND RECOMMENDATIONS

General Comment

Prior to revising this report, the entire "Team" should meet and determine what figures should be presented in this section and in what format. The current figures do not convey information in an interpretable manner (because of some of the reasons listed above).

Page 6-1, 1st Complete Paragraph

Was each monitoring well sampled and analyzed for four rounds? The data tables do not appear to suggest that only three rounds of sampling were completed.

PAHs typically serve as an acronym for polycyclic aromatic hydrocarbons (naphthalene, fluoranthene, etc.) and not chlorinated hydrocarbon pesticides.

Page 6-1, 3rd Complete Paragraph

Figure 6-1 would greatly facilitate the description of specific contaminant sources in Section 4. We suggest that this figure be referenced in the appropriate sections.

Page 6-1, Last Paragraph

Analytical information from surface soil samples should also be presented in Section 6.0. It could be combined with the discussion on contamination in soils and fill and on Figures 6-2 and 6-3. additionally, the depth of the soil borings' maximum contaminant levels should be included.

Page 6-2, Figure 6-1 Locations of Pits, Foundations and Outfalls

It is difficult to evaluate this figure because of its reduced scale.

Do the investigators know how deep some of the foundations are? Are any of the footings anchored into bedrock? The location and depth of some of the footings and foundations may have some impact on contaminant migration and may be acting as a vertical conduit or barrier for contamination. Is this a possible explanation for the observed soil contamination beneath the water table?

Pages 6-3 and 6.4, Figures 6-2 and 6-3, Maximum Metals & PCB Levels in Soils and Fill

The use of U.S. averages and ranges is probably not for WSW site characterization.

Additionally, it would be appropriate to indicate at what depths the metals concentrations were present.

Page 6-6, Figure 6-5, Total BTEX and PAHs in Monitoring Wells, Sampling Rounds 1, 2 and 3 (ug/l)

Was there a fourth round of ground water samples collected or not?

Page 6-30, Section 6.1 Slag Area (Recommendations)

Currently, no additional field work is proposed for the slag area. WWES recommends that some TCLP testing be performed to determine whether compounds in the slag is leaching at

levels that would render the underlying material characteristically hazardous. The USDOC may be liable if they are selling this material and it is leaching out hazardous constituents in other areas. A similar situation has just been in litigation and determined that if the materials in question were characteristically hazardous, then it would not be exempt from CERCLA.

What is going to be done about the surface soils impacted by PAH and PCB contamination?

Have the "discarded gas tanks" been properly disposed of or are they still lying on the ground?

Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area or contaminating this area?

Only 5 borings to a depth of approximately 25 feet have been completed for this 30-acre area, and only two monitoring wells exist in the slag area. We recommend that additional borings be advanced, a minimum of one monitoring well be installed, and one boring be advanced to bedrock and soil samples collected to determine possible DNAPL migration.

6-7. 2nd Complete Paragraph

LIZ, I'M NOT FAMILIAR WITH SACM. IS THEIR RECOMMENDATION ACCURATE?

Page 6-7. 5th Complete Paragraph

A risk assessment must be completed for the entire WSW site.

Page 6-7. 6th Complete Paragraph

We understood that the Phase I initial sampling and analysis provides preliminary data which will significantly guide the completion of Phase II sampling and analysis during the winter and spring of 1994. The RI report will be based on the findings of both Phase I and Phase II. Is our understanding accurate?

Page 6-7. Last Paragraph

Although the Interim Report indicates that the "slag area appears to be the least contaminated area", we recommend that the slag and its underlying soils be TCLP tested.

Page 6-30. Section 6.2 Office Area (Recommendations)

Only one monitoring well/boring has been installed in this area to date. What is the assumed source of contamination in this area?

How deep are the footings for the Office Building? Does the building have a basement? If so, has a vapor survey been completed? Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area or contaminating this area?

We recommend that an additional soil boring be advanced to bedrock and soil samples collected to determine possible DNAPL migration.

Page 6-31. Section 6.3 Steel Finishing Area

Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area or contaminating this area?

We recommend that an additional soil boring be advanced to bedrock and soil samples collected to determine possible DNAPL migration.

Page 6-31. Section 6.3.3 Pits and Foundations

If the water in the pits is contaminated with listed hazardous waste constituents, the proposal to pump into the Calumet River or into the Chicago POTW with no treatment would not be recommended. Use of a mobile stripper to treat the water may be preferred prior to such off-site disposals

The location of the old North Slip needs to be further delineated.

Page 6-32. Section 6.4 Ore yard (Recommendations)

Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area?

We recommend that an additional soil boring be advanced to bedrock and soil samples collected to determine possible DNAPL migration.

Page 6-32. Section 6.5 Blast Furnace Area (Recommendations)

Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area?

We recommend that an additional soil boring be advanced to bedrock and soil samples collected to determine possible DNAPL migration.

Page 6-33. Section 6.6 Steel Production Area (Recommendations)

Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area?

We recommend that an additional soil boring be advanced to bedrock and soil samples collected to determine possible DNAPL migration.

Page 6-34. Section 6.7 Coke Plant/Coal Storage Area (Recommendations)

Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area?

We recommend that an additional soil boring be advanced to bedrock and soil samples collected to determine possible DNAPL migration.

Page 6-35. Section 6.7.3 Pits And Foundations. First Paragraph

Regarding the statement "Arsenic, chromium, mercury, zinc, and cyanide were highly elevated in coke battery foundation sediments but not measured in the gas holder foundation." Does this mean that analysis of arsenic, chromium, mercury, zinc and cyanide did not occur in sediments collected from the gas holder foundation? Or that these compounds were analyzed for but not detected in sediments collected from the gas holder foundation?

Page 6-36. Section 6.8 Future Work

If Phase 2 investigations are going to include the installation of new monitoring wells (which would allow the collection of subsurface soils and ground water), WWES recommends that inorganic analyses should be included as well as organic analyses. The cost of the inorganic analysis is not exorbitant and the information gained will be useful, not extraneous. We also recommend that several well nests be installed throughout the WSW to determine the vertical gradient.

Page 6-36. 2nd Complete Paragraph

If it is decided to treat the various areas as separate operable units, then there is no need to complete a risk assessment for the overall site.

Page 6-37. 3rd Complete Paragraph

Although discerning the source of contamination for river bottom sediments will be difficult, the sediment within the slips will generally be considered part of the WSW site. True?

Page 6-37. 1st Bullet

In addition to the well sampling, we recommend the installation of a paired well adjacent to several existing wells to determine the vertical gradient between the Carmi Sand and the Wadsworth Till. Some wells may be finished as water-table wells, some as DNAPL interceptors at the till surface, and others within the till itself.

Page 6-37, 2nd Bullet

What is the meaning of a "background" well. In addition to background wells, double-cased wells should be installed in groundwater at depths greater than the Wadsworth Till to investigate possible significant vertical contamination.

Page 6-37, 3rd Bullet

Rather than conduct in-situ hydraulic conductivity tests, such as slug tests, we recommend that Shelby Tube samples of the Wadsworth Till be collected for laboratory determinations of the hydraulic conductivity.

Page 6-37, 4th Bullet

In addition to sampling tunnel/sewer waters, we suggest that tracer surveys be completed to determine the potential receptors.

Page 6-37, 6th Bullet

See above comment.

Page 6-37, Last Paragraph

As indicated in this paragraph, we are prepared to review the Phase II Work Plan, and assist the Corps as they investigate/remediate the site.

APPENDIX I PIEZOMETRIC SURFACES**General Comments**

- Many of the figures reflect a computer-generated perspective, which may, at times produce unreasonable contours. (See, for example the "hole" mentioned on page 3-26 and illustrated on page I-3.)

- The contours drawn beyond the confines of the most distant monitoring well should be dashed, because they are conjective.
- No piezometric surface maps should include till monitoring well data collected within 2 months of well sampling, because full recovery of the water level to equilibrium may require such a delay.
- None of the effects of teh filled old North Slip are visible an the piezometric surface maps, but this slip likely does effect the local contours.
- As suggest in the text, MW-24 may have been inaccurated surveyed.

Some Appendices plots coming

~~piezometric surface maps in appendix 1.) Are these units hydraulically isolated from each other? How have the monitoring wells set in the Wadsworth been sealed from possible overlying contamination? Please discuss what, if any, vertical gradient exists between the two aquifers.~~

- A complicated network of storm sewers existed beneath the WSW facility. These sewers drained to the Calumet River through one of at least 14 sewer outfalls. Are these sewer lines still intact? These lines may dictate the water surface for the surficial Carmi Sand. Have tracer surveys been considered as a possible tool to determine the effects of the sewer lines on ground water flow within the Carmi Sand.
- In general, the geologic stratigraphy has been inadequately developed. Soil borings should be advanced and samples collected from each area of concern to the depth of bedrock. In fact, the installation of several bedrock monitoring wells may be considered to determine its water quality.
- The Illinois EPA (IEPA) has published soil and ground water cleanup objectives for petroleum-release sites. Are portions of the WSW "petroleum-contaminated?" If so, the IEPA clean-up objectives should be considered as state ARARs.
- Which geophysical methods are being considered to delineate the old North Slip and determine the depth of the slips' sheet pilings?
- Some of the land depicted on the figures as being part of the WSW site has not been addressed at all within the Interim Report. Why?
- No soil borings or monitoring wells appear to have been placed in the vicinity of the steel "pickling" area (acid bath to strip steel prior to plating); the pickling area was approximately 500 feet northeast of the guard house on 106th Street. Has this possible acid contamination been considered as an environmental concern?
- The ground water flow rates presented on page 3-22 appear to be inaccurate although the hydraulic conductivities are reasonable. Please re-calculate and provide the detailed calculations for review.

- Were any of the monitoring wells completed as water table wells? If not the existence of LNAPLs in MW-5 and MW-19 suggests a large floating pool of petroleum product contamination.

Where were the sewage treatment sludges disposed? If utilized as fill on-site, then we may have discovered the source of the scattered pesticide contamination.

- Comparing the WSW site's soil analytical results with U.S. soil averages, Welsh soil averages and Velsicol cleanup standards is not appropriate. We recommend instead, that the site's soils be compared with background soil samples from surrounding land.

SECTION 1.0 - INTRODUCTION

General Comment

Although pages 1-14 and 1-15 of Section 1.2.2 discuss each of the site's major areas, a few paragraphs introducing the entire steel-producing process would greatly enhance the significance of WSW's reference as "a truly integrated steel manufacturing facility" (paragraph of page 1-9).

Pages 1-14 through 1-16 and Figure 2-1

Page 1-23, 1st Complete Paragraph

Why are some areas which are indicated as existing within the WSW Trust not included within the Interim Report's areas of investigation? (For example, land west of Torrence Avenue, or land west of the existing playground, formerly a railroad yard.)

Page 1-23, 1st Complete Paragraph

Apparently the bottom of a sump was broken to prevent rain water retention, but would this allow rain water to more easily percolate through possible contaminated soil and more easily impact the ground water? Were the underlying